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(54) TOOTHPASTE PREPARATIONS

(71) We, BLENDAX - WERKE R. SCHNEIDER & CO., a company Kommanditgesellschaft, organised according to the laws of Germany, of Rheinallee 88, Mainz am Rhein, Germany, do hereby declare the invention for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention concerns toothpaste preparations having an improved transparency or translucency.

Translucent toothpastes, particularly those based on a transparent or translucent gel, currently enjoy increasing popularity with the consumer.

In attempts to prepare such a toothpaste it has been shown, however, that especially then when it is to contain constituents acting as polishing agents such as dehydrated silica gels and pyrogenically prepared silica, a satisfactory transparency or translucency could not be obtained. In addition, such toothpastes become very quickly covered by a skin after application to the toothbrush, which is a further unpleasant and undesirable effect.

It has already been suggested to improve the transparency or translucency of toothpastes containing a silica xerogel, a silica aerogel, or pyrogenically obtained silica, by the addition of about 1 to 15% by weight of a polyethylene glycol with a high-molecular weight from at least 800 up to about 20,000. Such high-molecular weight polyethylene glycols, however, have the disadvantage that they are difficult to work into the gel-like toothpastes and consequently turbidity occurs in the end product. Prevention of skin formation on the toothpaste by the addition of high-molecular weight polyethylene glycols has not proved possible.

The present invention provides a toothpaste comprising a dental vehicle containing water, a humectant, a gelling agent, and optionally a polishing agent and/or a thickening agent, and containing a polyethylene glycol having a molecular weight of 200 to 700,

the said toothpaste being transparent or translucent.

It has been found that toothpastes based on a transparent or at least a translucent gel, which have practically no tendency to skin formation, can be obtained when polyethylene glycol having a molecular weight of not more than 700 is included therein. This latter substance can be worked into these pastes without any difficulty. Advantageously the product contains said polyethylene glycol in an amount of 0.25 to 20.0% by weight of the composition. A particularly highly transparent toothpaste with excellent properties is obtained when this paste contains as a polishing and/or thickening agent a dehydrated silica gel with an average particle size of 2 to 20 microns and, preferably, a surface area of less than 600 m² per gram, preferably 250 to 350 m² per gram, particularly in an amount of 5 to 50, especially 5 to 25% by weight of the entire composition.

However, it is also possible to achieve the effect according to the invention in transparent toothpastes containing no polishing agents by the addition of the said polyethylene glycol of low molecular weight. Such toothpastes, for example, contain an aqueous solution of 0.1 to 5.0% by weight of an alkali or amine salt of polyacrylic acid or dextran derivatives as the gelling agent. It is also possible to work into the gel-like toothpastes with an improved transparency and translucency grains or stripes of a further paste-like mass, which may be of a different colour from the gel matrix, thereby providing an additional attraction for the consumer.

The transparent and translucent toothpastes of the invention may contain, apart from the thickening and polishing agents, other substances conventionally included in toothpastes.

Suitable humectants are glycerol, sorbitol, and other sugar alcohols and also diols, such as propylene glycol, diethylene glycol or butane-1,4-diol, which are present in the toothpastes according to the invention in an amount of 5 to 90%, especially 25 to 80% by

weight. The addition of wetting and foaming agents, preferably sodium lauryl sulphate or sodium lauroyl sarcosinate, may be advantageous.

- 5 Besides the customary flavour and aromatic substances, the toothpastes of the invention may also contain preserving agents, e.g. hexachlorophene or *p*-hydroxybenzoic acid alkyl esters, and, if a caries-prophylactic effect is required, also fluorine compounds, especially alkali metal fluorides and/or alkali metal monofluorophosphates.

The following Examples illustrate the invention:

15 Example 1
Transparent blue toothpaste:

	by weight
Carboxymethylcellulose	0.500%
20 Sodium benzoate	0.150%
Polyethylene glycol 400	5.000%
Glycerol, 99.5%	50.000%
Water	20.947%
Dehydrated silica gel (6 microns particle diameter: surface area 290 m ² per gram)	20.000%
25 Saccharin-sodium	0.100%
Aroma	1.200%
Sodium lauryl sulphate	2.000%
30 Patent Blue V	0.003%
Phenyl salicylate	0.100%

Example 2
Transparent red toothpaste:

	by weight
35 Irish moss	0.500%
<i>p</i> - Hydroxybenzoic acid methyl-ester	0.200%
Formalin, 40%	0.050%
40 Sorbitol, 70%	50.000%
Glycerol, 99.5%	15.000%
Polyethylene glycol 600	3.000%
Water	8.842%
Amorphous silica gel (average particle diameter 9 microns: surface area 290 m ² per gram)	18.500%
45	

Saccharin-sodium	0.050%	
Aroma	1.100%	
Sodium monofluorophosphate	0.380%	
Sodium fluoride	0.110%	50
Bromochlorophene	0.060%	
Sodium lauryl sulphoacetate	2.200%	
Food Colour Red 3 (E 123)	0.008%	

The Irish moss, which acts as a thickening agent, may be replaced by 0.1 to 5.0% by weight of other well-known thickeners for use in toothpastes, e.g. methyl cellulose, ethyl cellulose, hydroxyalkyl celluloses, or carb-oxy-methylcellulose.

WHAT WE CLAIM IS:—

1. A toothpaste comprising a dental vehicle containing water, a humectant, a gelling agent, and optionally a polishing agent and/or a thickening agent, and containing a polyethylene glycol having a molecular weight of 200 to 700, the said toothpaste being transparent or translucent.
2. A toothpaste as claimed in claim 1, containing said polyethylene glycol in an amount of 0.25 to 20.0% by weight of the toothpaste.
3. A toothpaste as claimed in claim 1 or 2, containing as polishing and/or thickening agent a dehydrated silica gel with an average particle size of 2 to 20 microns.
4. A toothpaste as claimed in claim 3, which contains dehydrated silica gel with a surface area of less than 600 m² per gram.
5. A toothpaste as claimed in claim 3, which contains dehydrated silica gel with a surface area of 250 to 350 m² per gram.
6. A toothpaste as claimed in claim 1, substantially as described in either of the Examples herein.

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